

densis Miller.¹ If, however, one takes the view that *Abies canadensis* is not a valid name (see footnote on the preceding page), as it is against the rules of nomenclature in so far as Miller should have used this combination for the Hemlock Spruce, the oldest name for the White Spruce would be *Picea glauca* Voss in Mitt. Deutsch. Dendr. Ges. XVI. 93. 1907. (*Pinus glauca* Moench, Verz. Schloss Weissenstein, 73. 1785.—*Pinus laxa* Ehrhart, Beitr. III. 24. 1788.—*Pinus alba* Aiton, Hort. Kew III. 371. 1789.)

ARNOLD ARBORETUM.

FLORA OF THE VICINITY OF NEW YORK, A CONTRIBUTION TO PLANT GEOGRAPHY.—This "flora," by Norman Taylor,² will interest field-botanists of New England, for the area covered includes all of Connecticut as well as southeastern New York, all of New Jersey, and eastern Pennsylvania; and much emphasis is given to some of the geographic relations of the flora covered. The author's attitude is indicated by the statement in the Preface: "The attempt to explain the origin of the flora centering near the city, and the factors that have played their part in shaping its present composition, has, it seems to the writer, greater value than any enumeration of the species could possibly have." The author is modest in his approach to a vast question and, like most of those who enter such problems, has felt the handicap of too limited material for sound generalizations, saying: "no one is so conscious of the scarcity of such material as the writer. The book, therefore, is not so much a local flora as a method of writing one,—in some ways it is little more than a record of the incompleteness of our present knowledge."

As would naturally be expected, "the taxonomy and nomenclature have been brought into substantial accord with the second edition" of Britton & Brown's *Illustrated Flora*;³ but the author expresses a

¹ The combination *Abies Picea* Miller presents a case very similar to that of his *Abies canadensis*. If *A. canadensis* is considered a valid name, *Abies Picea* Miller must be considered a valid name also, for the oldest specific name for *Pinus Abies* cannot be used, as it would duplicate the name of the genus which is against art. 51, 2 of the International code, and a new specific name was necessary for which Miller choose *Picea*. In this case it is quite clear that it was not Miller's intention to transfer the Linnean name from *Pinus* to *Abies*, and the same may have been the case with *Pinus canadensis* L.; we may, therefore, in both cases consider Miller's names as new names. This will prevent the use of the name *Abies Picea* Lindley in Penny Cycl. I. 29 (1833) for the European Silver Fir for which the oldest name would then be *Abies alba* Miller, Dict. Ed. 8, no. 1. 1768. (*Abies pectinata* De Candolle, Fl. Franç. III. 276. 1805, not Gilibert, nor Poiret).

² Memoirs of the New York Botanical Garden, Vol. V. by Norman Taylor, pp. vi + 683. Issued January 30, 1915.

³ See RHODORA, xv. 220 (1913).

certain degree of independence in his statement that, "This does not imply, however, that the writer favors all the generic and specific delimitations of that work, nor all the nomenclatorial changes there proposed." What a pity that this healthy spirit of scientific freedom could not have found fuller expression, at least by a brief note, whenever the author felt sure of his own convictions! In a very few instances this has been done, as, for example, when *Bidens Beckii* is retained in *Bidens* instead of separated as a genus *Megalodonta*, as is done in the *Illustrated Flora*; and when *Juncoides* (or *Luzula*) *sal-tuense* (*J. carolinae* of the *Illustrated Flora* in great part, not *L. carolinae* Watson) is pushed back into the European *J. pilosum*. In passing it may be remarked that *Megalodonta* is a far better genus than most of the old sections and subgenera which temporarily parade as genera, and that our woodland *Luzula* is kept distinct from the European *L. pilosa* not only in American manuals but by such a learned European specialist as the late Franz Buchenau.

The catalogue of plants is presented in useful and somewhat original form, giving a statement of the local occurrence of the species in each state or section of state covered, and a paragraph indicating the occurrence or absence of the plant on certain of the geological formations. Broad ranges are also given, substantially as in Britton & Brown, and keys copied from that work are included. This body of information is bound to be much referred to by future workers, for it draws together a vast amount of material from scattered sources.

As a final authority on geographic distribution, however, the Catalogue would have gained greatly if its author had restricted himself less to the dictum of the *Illustrated Flora* and had given recognition to some interpretations not there included. For example, it is difficult to understand, now that the question has been worked out,¹ how a student of plant geography can be content to call our annual *Polygonum glaucum* identical with the southern European frutescent *P. maritimum*, or our endemic *Plantago decipiens* specifically identical with the Old World *P. maritima*. Another unfortunate result of accepting unquestioned the evaluations put upon species by Britton & Brown and the suppression of strongly marked geographic varieties is a great distortion of the geographic truths upon which the generalizations of the book are based. The suppression of *Scirpus Smithii* Gray, as a pure synonym of *S. debilis* Pursh, for example, will appeal to no discriminating student of our sedges; and the absolute merging of Michaux's *Smilax pulverulenta* into *S. herbacea* L., with the statement that the aggregate extends eastward to New Brunswick, obscures an important fact. *S. pulverulenta*, sometimes treated as a variety but recognized as a distinct species by such a painstaking and cautious student as Dr. Witmer Stone, does not occur either in New England or New Brunswick. Similarly, the failure to distinguish

¹ See RHODORA, xv. 69-71 (1913).

many other species and good varieties, presumably because they are not recognized in the *Illustrated Flora*, throws an unfortunate shadow of uncertainty over any conclusions which may be drawn from the floristic data. The same obedient acceptance of only such species as are registered in the *Illustrated Flora* gives us anomalies like the following. On pages 265 and 266, *Salix squamata* Rydb. is numbered and entered regularly as a sound species, but with the comment, "distribution and specific status . . . not fully understood," which is a delicate way of quoting Britton's "probably a state of the preceding species [*S. discolor*]"; but on page 283, *Urtica Lyallii* Watson "is omitted from the list because its specific and distributional status are open to question."

A flora of so large an area, and especially one upon which many scattered notes have been published, is necessarily difficult to cover with completeness, and it is natural that some perfectly good records have been overlooked. We do not find *Juncus conglomeratus* in the Catalogue, although it is geographically one of the most interesting plants of the flora covered (see Fernald & Wiegand, RHODORA, xii. 85, 86; Bissell, RHODORA xiii. 31; Fernald, *ibid.*, 140; Stone, Pl. so. N. J. 330). *Equisetum scirpoides*, a member of the Canadian flora which extends southward into Litchfield County, Connecticut, is not definitely admitted to the Catalogue but called a "waif," thus throwing this indigenous woodland plant into the limbo with the rubbish-heap *Cycloloma*, *Beta*, and *Spinacea*! *Luzula campestris*, var. *echinata* (*Juncoides echinatum* Small) occurs in New Jersey and Pennsylvania (see RHODORA, xv. 42), and *Scirpus Peckii* is found in Connecticut (see RHODORA, xv. 98).

One of the most valuable services a compiler of a local catalogue can render is finally to dispose of old and somewhat doubtful records, or at least to take note of and indicate the present knowledge of such cases. Mr. Taylor has performed this service in several instances: *Triglochin palustris*, *Aletris aurea*, *Smilax Bona-nox*, etc.; but we miss from the list of such accountings a number of species formerly reported from the area. For instance, *Phorodendron flavescens*, reported from Staten Island (see Britton, Bull. Torr. Bot. Cl. xi. 76); a cultivated fern, thought to be an *Asplenium*, reported by Dr. Britton in 1897 as a notable case of "naturalization" (see Bull. Torr. Bot. Cl. xxiv. 588); *Pteris tremula* and *Dryopteris patens*, reported in 1897 as "naturalized" in New York City (Fern Bull. vi. 10); and *Polypodium polypodioides*, reported in 1898 as found on Staten Island in 1896 (Fern Bull. vi. 54).

In reading the Introduction to the book, which is, after all, quite as important as the Catalogue proper, for in it are the generalizations, it is impossible to avoid the impression that the author is floundering in water too deep for him. A thoroughly satisfactory correlation of the present distribution of our flora with the geological history of the continent is something to strive for, but it involves so intimate a

knowledge of the rapidly altering geological conceptions that few, if any, thorough botanists can be in position to offer more than tentative explanations. This Mr. Taylor clearly realized. But the first fundamental requirement for satisfactory generalization upon the origin of a flora is a profound and thoroughly exact knowledge of the plants, their habitats and ranges; and the second fundamental requirement should be precision in the exacting art of compilation. These requirements have, apparently, not been sufficiently realized either by the author or his advisors. At least, it is somewhat startling to find, on page 4, in the list of characteristic *bog* plants *Panicum linearifolium* and *Aster spectabilis* listed along with the real bog species *Arethusa bulbosa* and *Sarracenia purpurea*. To be sure, in the Catalogue we are told that *Panicum linearifolium* occurs in "dry soil" (p. 109) and *Aster spectabilis* in "dry sandy soil" (p. 612); but these correct statements of habitat were borrowed literally from Britton & Brown, not, it would seem, from the author's experience.

On page 5 begins a long list of "Plants Found Exclusively North of the Moraine in Our Area," introduced by a paragraph from which the inference is, that somehow this essentially northern flora has been thus delimited in its range through "the profound influence of the continental glacier." The list contains, however, such examples as *Cryptogramma Stelleri* and *Arabis viridis*, which occur in sheltered crevices or recently formed talus, chiefly of limestones and traps, and are in nowise inhabitants of glacial soils; dozens of species (such as *Abies balsamea*, *Sparganium minimum*, *Carex diandra*, *C. novae-angliae*, *Xyris montana*, etc., etc.) abounding in the woodlands, ponds or sphagnous bogs of the Magdalen Islands which "exhibit the most remarkable non-glaciated condition of any part of the eastern provinces of Canada";¹ and several species (*Trisetum spicatum*, *Juncus trifidus*, etc.) which are found on the high *unglaciated* Torngat Mountains of Labrador.² Incidentally, it may be noted that the "*Juncus trifidus*" of Taylor's Catalogue is the var. *monanthus*, by some European students treated as a distinct species and in this country occupying a strikingly different range from true *J. trifidus*; but how these plants and some scores of others in the enumeration (including the Dwarf Mistletoe, parasitic on Spruces and Larches) have had their present distribution determined by "the profound influence of the continental glacier" is not made clear.

In the long list just referred to Taylor indicates by an asterisk those plants which "have been found only at elevations in excess of 1,000 ft." This subgroup contains such plants as *Carex castanea* ("only . . . from Salisbury, Conn." — p. 202); *Ledum groenlandicum* ("CONN. North-

¹ Chalmers, Geol. Surv. Can., Ann. Rep., n. s. vii. 48M (1895).

² "I was able to confirm Dr. Robert Bell in the proof . . . that an overwhelming general glaciation of the Torngats, such as occurred in the White, Green, and Adirondack Mountains, did not take place in the last glacial epoch." — Daly, Bull. Geogr. Soc. Phila., iii. 210 (1902).

eastern Litchfield Co. N. Y. Pine Plains, Dutchess Co.," etc.— p. 488); *Valeriana uliginosa* ("known in our area only from Pine Plains, Dutchess Co., a region with . . . an elevation of about 1,000 ft." — p. 582); and *Petasites palmata* ("Localized in our area near Salisbury, Conn., at elevations of about 1,500 ft." — p. 634). The inaccuracy of the author's work and its consequent lack of finality are indicated when we view the real facts: that the Connecticut stations for *Carex castanea* at Salisbury (and also at Canaan — see Cat. Fl. Pl. Ct. 419) are in the alluvium of the Housatonic River at an altitude of about 400 (not 1,000 or 1,500) feet; that the Connecticut stations for *Ledum* are at an altitude between 100 and 200 (not "in excess of 1,000") feet; that the Pine Plains stations for *Ledum* and *Valeriana* are, according to their discoverer, L. H. Hoysradt, in marshes "a little lower than the village, which is about 300 [not '1,000'] feet above . . . the sea" (Bull. Torr. Bot. Cl. vi. 53); and that the Salisbury station for *Petasites* is at an altitude below 600 (not "about 1,500") feet.

Other long lists, quite as carelessly compiled, are made the basis of generalizations. How unfortunate that, before publication, these lists were not carefully scrutinized by someone with a large outlook upon our flora! Thus, on pages 14–17 is a list of "Southern Species Reaching Their Northern Distribution Point Within the Range of This Book." Many of the species are properly placed in the list, but about 30 of them extend northeast of the area covered. For instance, *Potamogeton confervoides*, abundant in eastern Newfoundland, was known to the late Thomas Morong from Massachusetts, New Hampshire (altitude 3,000 feet) and Maine (see Morong, Mem. Torr. Bot. Cl. iii. no. 2, 36). The latter facts ought to be familiar to the author, who was selected as competent to recast Morong's manuscript on *Potamogeton* for the *North American Flora*. Publications, perhaps not so intimately known to the author, but as readily accessible, should have shown him, to indicate a few cases, that *Juncus aristulatus* reaches Nantucket (Bicknell, RHODORA, vi. 174 and Bull. Torr. Bot. Cl. xxxvi. 6); that *Arenaria caroliniana* reaches Rhode Island (Oakes in Hovey's Mag. xiii. 218; Olney, Bull. Torr. Bot. Cl. v. 38; Sage, RHODORA, xv. 115); or that *Acer carolinianum* (*A. rubrum*, var. *tridens*) reaches Massachusetts (Rehder, RHODORA, ix. 116) and even New Brunswick (Fernald & Wiegand, RHODORA, xii. 110, 140).

Similarly, on pages 18–20, in another extensive compilation of "Northern Species Whose Southerly Distribution Outposts, in the East, are Within Our Area," a glance at the first half-column is sufficient to indicate the same carelessness or lack of accurate knowledge which pervades the book. Here are entered *Lycopodium alopecuroides* and *L. adpressum*, in spite of the fact that in the Catalogue it is stated, with an approximation to correctness, that *L. adpressum* occurs from "Conn. to the Gulf States" (p. 66), thus overlooking its extreme abundance in Rhode Island and Massachusetts; and that *L. alopecuroides* occurs from "N. Y. to Fla., near the coast, west to Miss.

Also in trop. Am." and in New York is known only from "Babylon, L. I." (p. 66), thus disregarding its occurrence on Nantucket (Bicknell, Bull. Torr. Bot. Cl. xxxv. 55), on Staten Island (Clute, Fern Bull. ix. 9), and at Southampton, L. I. (Clute, l. c. xiii. 88).

These illustrations serve sufficiently to indicate the quality of the compilation upon which the generalizations are based, and to suggest that, when in the Preface the author referred to "the incompleteness of our present knowledge," he was presumably speaking editorially. As to the generalizations themselves, they consist largely of an amplification of the author's previously published thesis, that the Pine Barren flora of New Jersey occupies an area (the Beacon Hill formation), which escaped Pleistocene glaciation, and there persisted essentially unchanged through the Pleistocene, while the vegetation of surrounding areas was highly modified. Of the validity of the data and the conclusions on this point the reviewer is not competent to judge; but when the author enters the regions to the northeast of New York city and attempts to generalize without regard to the geological (and often botanical) evidence, he certainly overworks glaciation and lack of glaciation. This tendency has already been commented upon, and the following extract, from page 24, is to the point.

"38. In this connection the distribution of the most remarkable plant of the pine-barrens, *Schizaea pusilla*, is very interesting. It is found only in the pine-barrens and in Nova Scotia and Newfoundland, and is unknown between these points. If Dr. Scharff's recently proposed theory that perhaps parts of Nova Scotia and Newfoundland remained unglaciated through all the period of the Pleistocene is correct, then it is not impossible that *Schizaea* is a relict in the pine-barrens of its southern migration, and that it is also a relict in the north, all the intervening territory having been preempted first by the ice, secondarily by more 'aggressive' plants after the recession of the ice. This is little more than interesting speculation, but Scharff, whether wrong or right in his contention, has opened up a wide field of discussion. It is certainly significant that *Schizaea* is not found in the unquestionably glaciated country, and is found only in the pine-barrens and in the [probably] unglaciated northeast. An almost similar distribution is that of *Aster nemoralis*, which is lacking in the intervening territory between its northern outposts in northern New York and Newfoundland and its southerly stations in New Jersey."

Now, any conclusions based upon the assumptions above quoted are bound to lead diametrically away from the truth. In the first place, an author who supposes that *Schizaea pusilla* made a "southern migration" to New Jersey overlooks the fundamental fact that *Schizaea* is *not* a boreal, but a Tropical and austral genus. Hooker recognized 26 species and Christensen, though differing slightly in his interpretation, maintains the same number. Of these, 9 are confined strictly to the Southern Hemisphere (Australia, New Zealand, South Africa,

Polynesia, Patagonia, etc.), and 16 occur in the Tropics or the Tropics and southward in the Southern Hemisphere. Absolutely no species is known above latitude 30° N., except *S. pusilla*, which ranges from latitude 40°–50° N.; and this northern species is so close to Gaudichaud's *S. australis* of the Falkland Islands (near Cape Horn) and New Zealand that when La Pylaie described the Newfoundland plant as *S. filifolia* he identified the Gaudichaud material with it. Obviously, then, *S. pusilla* did not originate quite by itself in the boreal regions, antipodally separated from the bulk of the genus (and family, for that matter) and then make a "southern migration" toward the home of its congeners. On the contrary, the status of *S. pusilla* was well diagnosed by Mrs. Britton when she wrote: "It is one of the few remaining survivors of a time when a tropical flora was distributed as far north as Greenland" (Fern Bull. iv. 18). The case of *Schizaea pusilla* is not different in principle from that of *Lygodium palmatum*, *Selaginella apoda*,¹ *Eriocaulon septangulare* and others, *Lachnanthes* (*Gyrotheca*) *tinctoria*, *Podostemon ceratophyllum*, etc., whose relatives are almost wholly in the Tropics or the Southern Hemisphere.

But to return to another feature of Taylor's surmising. Any author who ventures to call Nova Scotia and Newfoundland even "probably" unglaciated shows no familiarity with those regions and a minimum of intimacy with the geological reports covering them. The reports of the Geological Survey of Canada are replete with evidence of the glaciation of Nova Scotia; and even the late J. W. Dawson, who argued strenuously for another explanation of the phenomena, admitted that "The whole surface of the peninsula has been striated and polished" (Dawson, *Acadian Geol.* ed. 3, 72 (1878)). As to Newfoundland, Chamberlain & Salisbury say: "Newfoundland seems to have been a separate area of glaciation" (*Earth History*, iii. 336), and Twenhofel states that, "Glacial time saw the island under a sheet of ice" (*Am. Jour. Sci.*, ser. 4, xxxiii. 21).

But the most amazing statement in the paragraph above quoted from Taylor is that in regard to *Aster nemoralis*; because to any experienced field-botanist its inaccuracy is so patent. Local catalogues could not have been consulted in framing this remarkable statement, for *Aster nemoralis* is listed in every New England state except Connecticut. In fact, an examination of the sheets of specimens immediately at hand shows the reviewer this species from 44

¹ SELAGINELLA *apoda* (L.), n. comb. *Lycopodium apodum* L. Sp. Pl. 1105 (1753). *S. apus* Spring in Mart. Fl. Bras. i. pt. 2, 119 (1840).

It is astonishing that the correct name for this common creeping species has not been heretofore assigned to it. Spring, in transferring the plant to *Selaginella* as *S. apus*, took the liberty of altering the Linnean specific name, a practice very common in his time; but certainly *apus* is not the feminine form of a neuter *apodum*. And even though, in violation of all nomenclatorial rules, some people may still persist in using the name *S. apus*, it would be quite inaccurate to ascribe the specific name to Linnaeus who used a different name.

stations in "the intervening territory between its northern outposts in . . . Newfoundland and its southerly stations in New Jersey", from which, according to Taylor, it "is lacking" — in Nova Scotia, Prince Edward Island, New Brunswick, Maine, New Hampshire, Vermont, and Massachusetts; while "its northern outposts in northern New York" are 500 miles south of the real "northern outposts" on Rupert River, entering Hudson Bay. Furthermore, the author seems to have ignored the records from Staten Island, Long Island and Rhode Island. In a single volume (vii.) of the Bulletin of the Torrey Botanical Club occur the following seemingly trustworthy records for *A. nemoralis*: "between River Head and Canoe Place," Suffolk Co., L. I. (*E. S. Miller*, p. 18); "on the Cretaceous soils of Staten Island" (*N. L. Britton*, p. 82); "Southern Rhode Island" (*W. W. Bailey*, p. 98). The fact is, that *Aster nemoralis* has not, as guessed by Taylor, been wiped out between New Jersey and Newfoundland by the ice, nor has it been crowded out by more "aggressive" plants. On the contrary, it *abounds* in the siliceous and granitic areas of eastern and central New England, Nova Scotia, and the Laurentian region of southern Labrador and northern Quebec (all profoundly glaciated); and it does so because it there finds the acid peats in which it delights to grow. But in the extensive basic or calcareous areas of western New England and much of eastern Canada, just as in the more fertile sections of Newfoundland, New York and northwestern New Jersey, it is rare or absent because the lowlands of those areas are mostly too calcareous to suit the plant.

In his effort to make the glaciation or non-glaciation of regions during the Pleistocene the dominant factor in determining the present distribution of southern plants which have reached Newfoundland or Nova Scotia, the author seems to have lost sight of a much more potent factor, namely, the now submerged continental shelf. This ancient extension of the Coastal Plain is hardly mentioned by Taylor. Nevertheless, when carefully considered in connection with really accurate phytogeographic data, it will be found to have played a far more important part in the distribution of Coastal Plain species than is generally recognized.

The reviewer's reason for thus entering at length into a discussion of the Introduction to a book, which, in spite of many admirable points, proves, on examination, to have been written without the painstaking care or the accurate compilation of facts which alone should be the groundwork for scientific deductions, is that he is intensely interested in the phytogeographic problems of northeastern America. And, at the risk of being unpopular, he feels it important, for the advancement of sound scholarship, to protest against the superficial and careless compilations which are so freely being published, even by potentially great institutions. Much inaccurate and unscholarly publication has seriously injured taxonomy; the same tendency intensified has cheapened ecology; and, unless we take the

utmost pains to verify all compilations and to publish only what we have carefully studied and digested, we shall soon cheapen and discredit phytogeography as well. With two such splendid models constantly before him as Stone's *Plants of Southern New Jersey*¹ and the Connecticut Botanical Society's *Catalogue of the Flowering Plants and Ferns of Connecticut*,² it is most unfortunate that the author of the *Flora of the Vicinity of New York* did not rise to the standard of accurate scholarship which has rendered authoritative the pages of those monumental volumes.— M. L. FERNALD.

VIOLA SEPTENTRIONALIS IN BRITISH COLUMBIA.—In the Gray herbarium there are two interesting specimens of *Viola septentrionalis* from along the boundary line between Washington and British Columbia. One was collected "in marshes, Pend Oreille River," by Dr. Lyall, who accompanied the "Oregon Boundary Commission" in 1861; it was sent to Dr. Gray from the Kew herbarium as *V. cucullata*. In Piper's *Flora of Washington* this is cited³ as *V. cuspidata* Greene — a synonym of *V. sororia* Willd., known no farther northwest than eastern Minnesota. Lyall's specimen is in petaliferous flower, and its strongly ciliate sepals, its lanceolate stipules sparsely bordered with gland-tipped hairs, and its cordate-deltoid leaf plainly mark it as *V. septentrionalis* instead of *V. sororia*.

The second specimen is from the herbarium of the Geological Survey of Canada, no. 63,518, J. M. Macoun collector, June 30, 1902, "alluvial woods flooded in spring, Cascade B. C." — a town on the international boundary only 20 miles west of Dr. Lyall's station. Macoun's plant is in various stages of fruit from cleistogamous flowers, and is in all respects characteristic *V. septentrionalis*, as heretofore known from eastern Ontario to Newfoundland, south to Central New York and southern New England.

If but one of these specimens were in evidence, the suspicion might arise that by some accident the label had become attached to the wrong specimen. But with two specimens from stations only 20 miles apart, collected independently by two expert botanists, the suspicion is inadmissible. The two reports are reciprocally confirmatory. Moreover, for this remarkable extension of range there are numerous

¹ See RHODORA, xiv. 94 (1912).

² See RHODORA, xii. 131 (1910).

³ Contrib. U. S. Nat. Herb. 11: 392.